

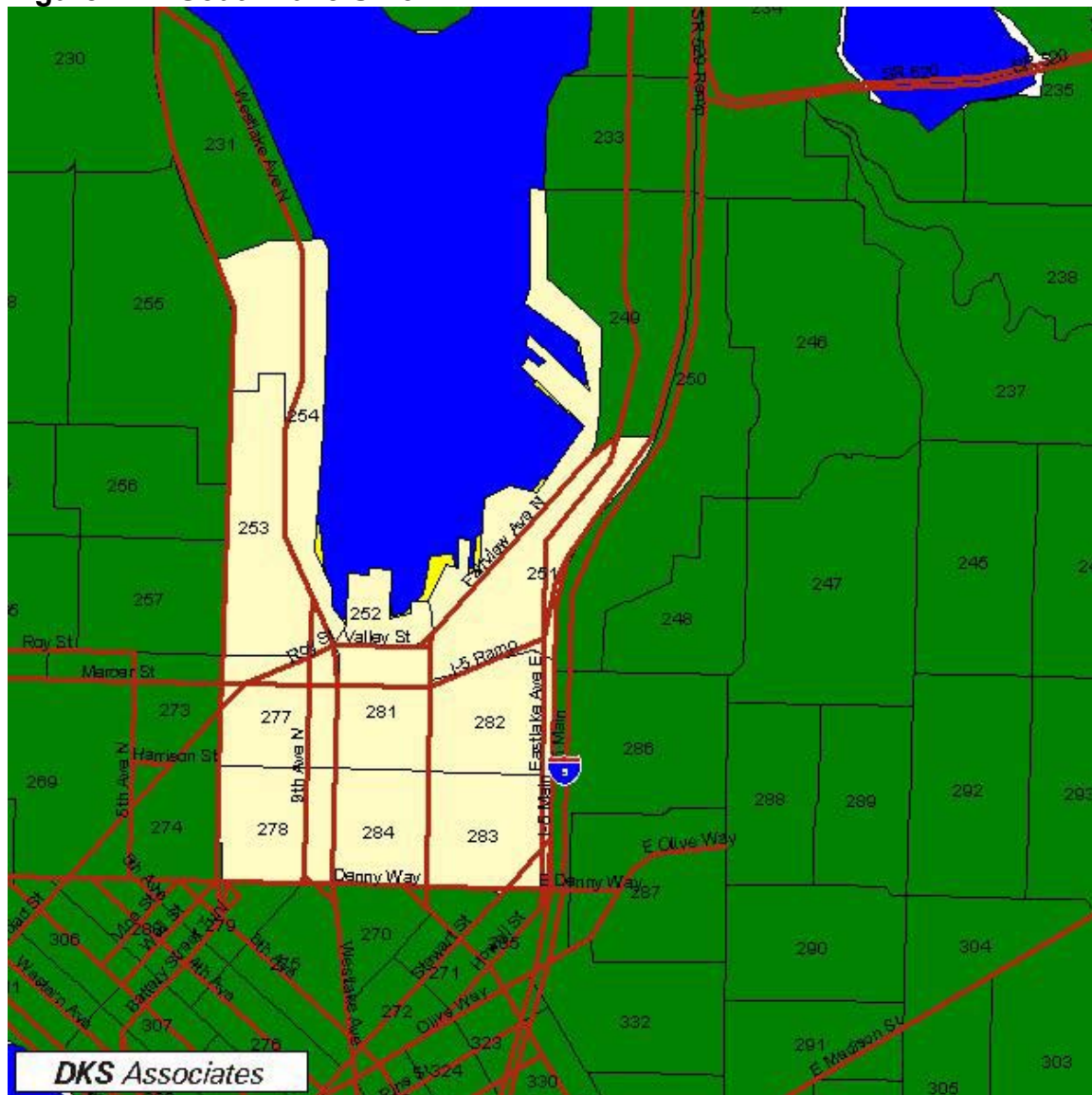
## South Lake Union

### 1.0 Setting and Physical Characteristics

#### 1.1 Location

South Lake Union is bordered to the west by Aurora Avenue N, to the east by I-5 and Eastlake Avenue N, to the south by Denny Way and to the north by Crockett Street on the west side of Lake Union and E. Lynn Street on the east side of the lake. The case study area boundaries are illustrated in Figure 1-1.

**Figure 1-1. South Lake Union**



## **1.2 Land Use Character and Mix**

South Lake Union is an urban area in the heart of Seattle. It has easy access to Downtown Seattle, the University District and many other places within the City of Seattle. The majority of the land in the southern study area is warehouse/light industrial. Restaurants surround the waterfront and a growing biotech corridor is on the eastside of the lake.

Lake Union is a designated Hub Urban Village under Seattle's 1994 Comprehensive Plan. As such, it was eligible for funding to develop a neighborhood plan. Planning for the area was delayed, however, as the City considered the prospect of creating a major urban park, "The Commons," in the heart of the neighborhood and revising zoning and circulation systems in conjunction with the park. Funding for the park and approval for an area master plan was placed before the voters in 1995; the vote failed to pass the proposal.<sup>1</sup> Microsoft co-founder Paul Allen owns a great deal of land in the area and has started to redevelop some of that property. The eventual impact of this redevelopment could be quite extensive.

## **1.3 Access to Freeways and State Facilities**

South Lake Union is bordered by SR 99 to the west and I-5 to the east. In addition, SR 520 is located close by and gives access to eastern King County.

**I-5.** This interstate highway runs just west of the study area and follows in the north-south direction from Canada down to Mexico. Locally, it runs from northern King County, through downtown Seattle, to southern King County. For travelers to/from the University District, it provides for a wide range of destinations. Access to this freeway is provided from Mercer Street.

**SR 99.** This highway is west of the study area and provides access to downtown Seattle to the south, and northern Seattle to the north. Access to SR 99 in the study area is provided from any of the East-West streets in the area. This highway is parallel to I-5 and rejoins it to the south north of Sea-Tac Airport and to the north in Snohomish County.

**SR 520.** This highway western end is at the study area, where SR 520 meets I-5. It provides access to the Bellevue, Kirkland, and Redmond areas, as well as other parts of eastern King County.

## **1.4 Roadway Network**

Some of the main roads used to enter South Lake Union are Dexter Avenue N. and Westlake Avenue from the northwest, Denny Way running east and west, and Eastlake Avenue from the northeast.

## **1.5 Transit Services**

The existing and future transit service levels are discussed in the following sections.

### **1.5.1 Existing Transit Service**

The following bus routes serve the South Lake Union area:

**Route 3** services Madrona, Central District, First Hill, Downtown Seattle, Belltown, Seattle Center East, and North Queen Anne. This route operates seven days a week and has an AM peak hour headway of 15

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<sup>1</sup> South Lake Union Neighborhood Plan. December 5, 1998; p 5.

minutes. Route 4 provides Service to and from N Queen Anne before 6:30 am, after 7:00 pm, and all day Sunday.

**Route 4** services Judkins Park, Central District, First Hill, Downtown Seattle, Belltown, Seattle Center East, and East Queen Anne. This route operates seven days a week and has an AM peak hour headway of 15 minutes.

**Route 8** services Rainier Valley, Capitol Hill, Group Health Hospital, the Seattle Center, and Lower Queen Anne. This route operates seven days a week and has an AM peak hour headway of 15 minutes.

**Route 16** services the Coleman Dock-Ferry Terminal, Downtown Seattle, the Seattle Center, Wallingford, East Green Lake, North Seattle Community College, the Northgate Mall, and the Northgate Transit Center. This route operates seven days a week and has a peak hour headway of 10 minutes.

**Route 17** services Downtown Seattle, Westlake, Seattle Pacific University, Ballard, Sunset Hill, and Loyal Heights. This route operates seven days a week and has a peak hour headway of 20 minutes.

**Route 26** services Downtown Seattle, Dexter Ave N, Fremont, Wallingford, Latona Ave NE, and East Green Lake. This route operates seven days a week and has a peak hour headway of 10 minutes.

**Route 28** services Downtown Seattle, Dexter Ave N, Fremont, Ballard, Whittier Heights, and Broadview. This route operates seven days a week and has an AM peak hour headway of 9 minutes. Shuttle service is offered every evening and all day Sunday, connecting at N 34th St and Fremont Av N with Route 26 for service to and from downtown Seattle.

**Route 66** services Coleman Dock-Ferry Terminal, Downtown Seattle, Eastlake, University District, Maple Leaf, Northgate Transit Center, Northgate Mall, and Northgate P&R. This route operates seven days a week and has a peak hour headway of 20 minutes.

**Route 70** services Downtown Seattle, Fairview Ave N, Eastlake, and the University District. This route operates six days a week and has a peak hour headway of 12 minutes.

**Route 71** services Downtown Seattle (Tunnel), Eastlake, University District, Ravenna, View Ridge, and Wedgwood. This route operates seven days a week and has a peak hour headway of 30 minutes.

**Route 72** services Downtown Seattle (Tunnel), Eastlake, University District, Maple Leaf, and Lake City. This route operates seven days a week and has a peak hour headway of 30 minutes.

**Route 73** services Downtown Seattle (Tunnel), Eastlake, University District, Green Lake P&R, Maple Leaf, and Jackson Park. This route operates seven days a week and has a peak hour headway of 12 minutes.

There are no official park and ride facilities in South Lake Union.

### **1.5.2 Forecast Transit Service for 2030**

The PSRC/Trans-Lake model was used to forecast the number of transit routes in the case study area for both the base and future conditions. Table 1-1 lists the number of routes by type (rail, ferry, high

frequency bus service, and low frequency bus service), while Table 1-2 lists the frequency of service for each transit type.

Over the next thirty years, the South Lake Union area should see a large increase in the number of high frequency bus routes that run through the area providing better service to nearby communities.

**Table 1-1. Number of Routes**

Time Period	Year	Rail	Ferry	High Bus	Low Bus	Total
AM Peak	2000	1		8	118	127
	2030	1		38	66	105
Mid-Day	2000	2	1	5	102	110
	2030	1		20	24	45

**Table 1-2. Frequency of Service (buses per hour)**

Time Period	Year	Rail	Ferry	High Bus	Low Bus	Total
AM Peak	2000	4		38	206	248
	2030	4		215	130	349
Mid-Day	2000	8	2	25	182	217
	2030	4		102	60	166

## **1.6 Parking Supply, Availability and Price**

Parking dynamics vary widely with the neighborhood, and it has only been in the past few years that a noticeable problem has surfaced. South Lake Union has enjoyed free-on-street parking and benefited from numerous low cost surface parking lots scattered throughout the neighborhood. The first area to feel the pressure was the Lake Union waterfront, where numerous successful area restaurants and businesses have taxed the limited parking supply. Other areas in the South Lake area have felt the pressure of additional parking demand, especially since some new developments are not required to construct parking as part of a City TDM strategy to reduce drive alone trips.

Parking supply is adequate throughout much of the study area, although there are areas where existing and future demand is expected to exceed the available supply. Available parking is a major concern to many locals, and solutions are specifically addressed in their neighborhood plan.<sup>2</sup>

The base parking supply was taken from a parking study performed by Mirai Associates. To extrapolate to 2030, an assumption was made that regional development would require existing regional parking requirements. The results are shown in Table 1-3.

**Table 1-3. Parking Supply and Demand by Type**

	Parking Type			
	Retail	Office	Other	Total
2000 Supply	817	1,128	14,055	16,000
2000 Demand	681	548	6,489	7,718
2000 D/S Ratio	0.83	0.49	0.46	0.48
2030 Supply				19,739
2030 Demand				9,632
2030 D/S Ratio				0.49

<sup>2</sup> South Lake Union Neighborhood Plan, December 5, 1998

When collecting parking costs, the PSRC/Trans-Lake baseline model assumes a relatively high parking cost in many parts of the region. Then, in the implementation of the model, the parking costs are lowered for many users to reflect that many users don't pay for the full price of parking. In the implementation of TEEM, the forecast parking costs were assumed to be one-half of the baseline PSRC/Trans-Lake model to account for people whose parking costs are subsidized. The resulting parking costs are shown in Table 1-4.

**Table 1-4. Average Parking Costs**

	Parking Costs	
	2000	2030
Drive Alone	\$1.44	\$3.48
Carpool	\$1.31	\$3.17
Vanpool	\$0.00	\$0.00

## **1.7 Pedestrian and Bicycle Facilities**

The South Lake Union area generally follows a grid format, allowing for good pedestrian access to the nearby amenities.

There is one heavily used bike lane in the area that follows Dexter Avenue N. from the Fremont Bridge to Denny Way. In addition, Eastlake Avenue E., Fairview Avenue N. and Queen Anne Avenue are all commonly used by bicyclists.<sup>3</sup>

There are many barriers to pedestrian and bicycle users in the South Lake Union area. Denny Avenue has a steep hill and high traffic. Mercer, Fairview, Eastlake, and many other streets in the area have high traffic due to their proximity to the I-5 and SR 99 ramps, and since they are so close to downtown. There used to be a trail/bike path that went around the south end of Lake Union, but it is disconnected from other bike paths/destinations. However, the City of Seattle is doing a major reconstruction of Westlake Avenue that includes the construction of non-motorized pathways along that street.

## **2.0 Population and Employment Characteristics**

Population and employment data for South Lake Union are discussed below.

### **2.1 Population**

The population of the South Lake Union area is expected to triple in the next thirty years (See Table 2-1). The massive increase in density reflects the changes that the area is already undergoing - from light industrial zones to a more urban area with a greater mix of uses.

**Table 2-1. Background Model Information**

	2000	2030
Size (sq. miles)	0.71	
Population	3,778	14,543

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<sup>3</sup> *Seattle Bicycling Guide Map, Seattle Transportation, Bicycling and Pedestrian Program, Summer 2000*

## **2.2 Employment**

The total employment and the mix of employment are expected to remain relatively constant over the next thirty years. The employment forecast for the area includes three thousand more employees. These additional employees are fairly well distributed by both employment type and size of employer. (See Table 2-2 and Table 2-3).

**Table 2-2. Employment by Type**

	<b>Model Employment</b>	
	<b>2000</b>	<b>2030</b>
Retail	2,977	3,390
Office	12,511	14,968
Other	6,745	5,516
<b>Total</b>	<b>22,233</b>	<b>23,874</b>

**Table 2-3. Employee Data by Size of Employer**

	<b>Number of Employees</b>				<b>Grand Total</b>
	<b>0-49</b>	<b>50-99</b>	<b>100-499</b>	<b>500+</b>	
2000	5,582	2,773	7,879	5,999	22,233
2030	5,993	2,978	8,460	6,442	23,874

## **2.3 Characteristics by Transportation Analysis Zone (TAZ)**

Table 2-4 lists the transit level of service definitions that were used for each TAZ, while Table-2-5 illustrates the changes in land use characteristics that are expected for each TAZ in the Crossroads area. Transit service is already high throughout the area, and is forecast to become even better over the next thirty years. In general, the mix of uses in the area is forecast to become slightly better, while the density is only forecast to change (from medium to high) in one zone.

Table 2-6 gives the population, employment and trips by local area TAZ for the South Lake Union area. These characteristics were summarized in earlier sections.

Table 2-7 shows that in the future most of the population and employment will be in zones that are better serviced by transit.

**Table 2-4. Transit Level of Service Definitions**

<b>Transit Service</b>	<b>Definition</b>
High 1	At least one (1) rail route or five (5) or more high frequency routes
High 2	Four (4) high frequency routes or at least fifteen (15) total routes
Medium 1	Three (3) high frequency routes or at least ten (10) total routes
Medium 2	Two (2) high frequency routes or at least five (5) total routes
Low 1	At least two (2) total routes
Low 2	Less than two (2) total routes

**Table 2-5. Land Use Characterizations by Local Area TAZ**

TAZ	Transit Service		Mixed-Use		Density	
	2000	2030	2000	2030	2000	2030
251	High 2	High 1	Medium	Medium	Low	Medium
252	High 2	High 1	Medium	Medium	High	High
253	Medium 1	High 1	Low	Medium	Low	Low
254	High 2	High 1	Medium	Medium	High	High
277	High 1	High 1	Low	Low	High	High
278	High 1	High 1	Low	Medium	High	High
281	High 2	High 1	Low	Low	High	High
282	High 2	High 1	Low	Low	Medium	Medium
283	High 2	High 1	Medium	Medium	High	High
284	High 1	High 1	Medium	Medium	High	High

**Table 2-6. Population, Employment and Trips by Local Area TAZ**

TAZ	Area	Population and Employment						Home Based Work Person Trips			
		Population		Retail		Other		Productions		Attractions	
	sq. miles	2000	2030	2000	2030	2000	2030	2000	2030	2000	2030
251	0.150	1,046	3,303	0	0	95	84	1,029	3,824	161	235
252	0.144	343	621	897	744	4,170	4,770	338	719	6,010	10,618
253	0.021	18	11	0	25	12	21	17	13	15	87
254	0.083	375	2,907	252	407	3,547	3,267	343	3,186	4,051	8,401
277	0.041	268	1,441	306	563	3,704	4,425	572	1,283	5,111	8,373
278	0.057	848	323	225	204	1,146	1,388	211	353	1,589	2,781
281	0.042	373	3,330	151	112	2,373	2,058	508	1,975	3,278	3,846
282	0.051	29	100	256	222	669	396	33	118	1,135	1,999
283	0.066	347	1,118	215	636	1,107	1,513	389	1,320	1,581	2,178
284	0.058	131	1,389	675	477	2,433	2,562	146	1,640	3,670	5,098

**Table 2-7. Population Employment by Transit Service**

		Transit Service Level						Total
		High 1	High 2	Medium 1	Medium 2	Low 1	Low 2	
Transit Service	2000 Base	3	6	1	0	0	0	10
	2030 Base	10	0	0	0	0	0	10
Population	2000 Base	1,247	2,514	18	0	0	0	3,778
	2030 Base	14,543	0	0	0	0	0	14,543
Total Employment	2000 Base	8,489	13,732	12	0	0	0	22,233
	2030 Base	23,874	0	0	0	0	0	23,874

## 3.0 Travel Behavior Inventory

### 3.1 Person and Vehicle Trips

The person and vehicle trips for study area employees and residents are illustrated in Table 3-1. As the population of South Lake Union is expected to triple over the next 30 years, it is not surprising that the

number of trips by residents is expected to increase dramatically as well. Additionally, while the number of people commuting to South Lake Union is forecast to increase by about 18,500, the PSRC/Trans-Lake forecast expects only about 2,500 additional vehicle trips. This is most likely attributable to the high level of transit service that is forecast for the base scenario.

**Table 3-1. Daily Commute Trips**

	Person Trips		Vehicle Trips	
	2000	2030	2000	2030
Study Area Employee	26,602	43,616	18,602	18,457
Employed Residents	3,586	14,431	2,496	6,983

### **3.2 Vehicle Miles Traveled**

The vehicle miles traveled to work by South Lake Union employees are illustrated in Table 3-2. As one would expect, the vanpool users traveled much farther than the other modes, with drive alone and transit users traveling about the same distance.

**Table 3-2. Average Vehicle Miles Traveled to Work by Mode**

Mode	Vehicle Miles Traveled to Work
Drive Alone	14
Carpool	17
Vanpool	25
Transit	14
Non-Motorized	0

### **3.3 SR 520 Corridor Trips**

About 3.4 percent of the PM peak period vehicle trips to and from South Lake Union cross the SR 520 bridge. As shown in Table 3-3, a higher percentage of vehicle trips entering the South Lake Union use the bridge, although trips leaving the study area contribute a higher total number of vehicles (i.e. over 1,400) to the bridge traffic. At 2,660 South Lake Union trips comprise 6.5 percent of total bridge traffic during the PM peak period.

**Table 3-3. Study Area Vehicle Trips Related to SR 520 Corridor**

	To the Study Area	From the Study Area	Total Trips
PM Peak Trips	20,220	58,769	78,989
Study Area Trips Crossing SR 520 Bridge	1,186	1,473	2,660
Percent of Case Study Trips Crossing SR 520 Bridge	5.9%	2.5%	3.4%

### **3.4 Average Vehicle Occupancy for Commute trips**

The average vehicle occupancy for vehicle trips is shown in Table 3-4.

**Table 3-4. Average Number of People per Vehicle**

	Average Number of People
Drive Alone	1.00
Carpool	2.08
Vanpool	8.76

### **3.5 Historical CTR Mode Shares by Year**

There were between twelve and fourteen CTR employers that provided updates to the CTR database in the South Lake Union area on any given year. The mode-split for these employers is shown in Table 3-5. In the last analysis period (2001), the percent of users who drive alone dropped dramatically.

**Table 3-5. Mode Share for CTR Employers**

	Number of Employers	Mode Choice					
		Drive Alone	Carpool	Vanpool	Transit	Non- Motorized	Other
1993	12	68%	15%	1%	10%	5%	1%
1995	14	66%	17%	1%	9%	5%	1%
1997	14	65%	17%	1%	11%	6%	1%
1999	14	60%	16%	3%	13%	7%	1%
2001	14	53%	19%	3%	18%	7%	1%

Source: DKS Associates

## **4.0 History with TDM and Land Use Strategies**

Generally, the employers in Seattle are responsible for the CTR programs, and King County Metro plays a much larger role than the City of Seattle in terms of CTR program development.

Table 4-1 lists the percent of South Lake Union employers who stated that they either did or did not offer a TDM program.

**Table 4-1. Percentage of CTR Employers Who Offer a Program**

		Year			
		1995	1997	1999	2001
CWW Program	Yes	45%	57%	53%	44%
	No	55%	43%	47%	56%
Telecommuting	Yes	45%	46%	60%	63%
	No	55%	54%	40%	38%
Flex Time	Yes	55%	57%	80%	75%
	No	45%	43%	20%	25%
Guaranteed Ride Home	Yes	64%	86%	53%	44%
	No	36%	14%	47%	56%
Ridematching Services	Yes	55%	71%	53%	50%
	No	45%	29%	47%	50%
Shuttle Service	Yes	9%	7%	7%	6%
	No	91%	93%	93%	94%
Bike Subsidy	Yes	9%	50%	20%	31%
	No	91%	50%	80%	69%
Walking Subsidy	Yes	9%	14%	20%	25%
	No	91%	86%	80%	75%
Carpool Subsidy	Yes	9%	14%	20%	38%
	No	91%	86%	80%	63%
Vanpool Subsidy	Yes	82%	71%	93%	75%
	No	18%	29%	7%	25%
Transit Subsidy	Yes	100%	93%	93%	81%
	No	0%	7%	7%	19%
Ferry Subsidy	Yes	64%	64%	67%	56%
	No	36%	36%	33%	44%
Gen. Transportation Allowance	Yes	0%	0%	0%	0%
	No	100%	100%	100%	100%
Clothes Locker	Yes	73%	71%	73%	69%
	No	27%	29%	27%	31%
Uncovered Bicycle Parking	Yes	27%	29%	33%	0%
	No	73%	71%	67%	100%
Covered Bicycle Parking	Yes	73%	71%	87%	75%
	No	27%	29%	13%	25%
Passenger Loading Area	Yes	55%	50%	47%	0%
	No	45%	50%	53%	100%
Shower Facilities	Yes	82%	79%	87%	81%
	No	18%	21%	13%	19%